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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/635,902	08/11/2000	Kozo Harada	50090-234	8376

7590 05/18/2005

McDermott Will & Emery  
600 13th Street NW  
Washington, DC 20005-3096

EXAMINER
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CHU, CHRIS C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

87m

**Office Action Summary**

Application No.

09/635,902

Applicant(s)

HARADA ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22 - 25, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22, 23 and 25 is/are allowed.
- 6) ☒ Claim(s) 24, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment filed on March 14, 2005 has been received and entered in the case.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 24 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsubosaki et al. (U. S. Pat. No. 5,714,405).

Regarding claim 24, Tsubosaki et al. discloses in e.g., Fig. 14 and Fig. 15 a composite semiconductor device structure (the structure in Fig. 15), comprising two semiconductor devices (see Fig. 15), wherein

- each of said semiconductor devices (20; column 9, lines 9 – 10) include:
  - o a semiconductor chip (1; column 7, line 64);
  - o a first electrode (4; column 7, line 65) formed on a first major surface of said semiconductor chip;
  - o an insulating layer (7; column 8, lines 38 – 39) formed on a second major surface of said semiconductor chip opposite to said first major surface;

- a conductive member (lead 3; column 8, line 19) connected to said first electrode and covering and fixing to a side surface of said semiconductor chip (see e.g., Fig. 9);
- said two semiconductor devices are stacked on each other (see Fig. 15), and
- a conductive member (3, at the bottom) of a lower one of said semiconductor devices is electrically connected to a conductive member (3, at the upper) of an upper one of said semiconductor devices.

Regarding claim 27, Tsubosaki et al. discloses in e.g., Fig. 14 and Fig. 15 the conductive member (3, at the bottom) of a lower one of said semiconductor devices being electrically connected to a conductive member (3, at the upper) of an upper one of said semiconductor devices via a metal bump (22; column 9, lines 10 – 11).

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubosaki et al. in view of Oda (U. S. Pat. No. 6,340,845).

While Tsubosaki et al. teaches the use of the conductive member, Tsubosaki et al. does not teach the conductive member's specific shape. Oda teaches in Fig. 1 a conductive member (4; column 4, line 35) being directly fixed on the side surface of a semiconductor chip (1; column

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4, line 2). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the shape of the conductive member of Oda into the conductive member of Tsubosaki et al. as taught by Oda to reduce the size of the semiconductor package (column 1, lines 16 – 17 and lines 43 – 45).

*Allowable Subject Matter*

6. Claims 22, 23 and 25 are allowed.

The following is an examiner's statement of reasons for allowance:

(a) Regarding claims 22 and 25, the prior art of record does not teach or suggest, either singularly or in combination, at least a conductive line pattern formed on a second major surface and extending from a second electrode, wherein the conductive line pattern is separate from a conductive member.

(b) Regarding claim 23, the prior art of record does not teach or suggest, either singularly or in combination, at least a conductive member of a lower one of semiconductor devices is directly connected to a conductive member of an upper one of the semiconductor devices when each member of the semiconductor devices has first electrode on a first major surface and second electrode on a second major surface.

*Response to Arguments*

7. Applicant's arguments with respect to claim 24 have been considered but are moot in view of the new ground of rejection.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chris C. Chu  
Examiner  
Art Unit 2815

c.c.  
Wednesday, May 11, 2005

  
**GEORGE ECKERT**  
**PRIMARY EXAMINER**